

EQUIPMENT

1. BALANCE: having an accuracy of at least 0.01 % of sample mass?
2. OVEN: capable of maintaining a temperature of 110°C±5°C?
3. PAN: flat pan for drying sample to constant mass?
4. If other methods for fines determination used:
 - (a) STEAM BATH OR HOT PLATE: for evaporation of solvent?
 - (b) SMALL-MOUTH GRADUATE: for measuring volume of solvent plus fines?
 - (c) IGNITION DISH:?
 - (d) DESICCATOR: for cooling of ignition dish?
5. EXTRACTION CENTRIFUGE: Rotarex or similar with rpm control?
6. TORQUE WRENCH:?
7. FILTER PADS: low ash E & D Type 627 or equivalent?
8. DRAIN TUBE; Neoprene with glass insert?
9. TACHOMETER:?
10. EXTRACT CONTAINER:?
11. MISCELLANEOUS: spike, 0.5 L container, rubber spatula, stiff brush?
12. HIGH SPEED CENTRIFUGE: SMM or equivalent?
13. CENTRIFUGE CUPS: for high speed centrifuge?
14. **VENTILATION: fume hood and/or effective surface exhaust system in a well ventilated area?**

Reflux Extraction:

15. JARS: as per ASTM test method B with single or double cones; a similar jar 460 mm high using only one cone also permitted?
16. WIRE CONES: as per ASTM?
17. CONDENSER: preferably stainless steel?
18. FILTER PAPER: MEDIUM GRADE - FAST FILTER?
19. HOT PLATE: EQUIPPED WITH THERMOSTAT CONTROL?
20. SAND BATH OR WIRE MESH: placed under glass jar to prevent localized heating?

For Both Types of Extractions:

21. DRYING PANS: enamel or stainless steel, approx. 250 mm dia. x 80 mm deep for drying aggregates; pans approx 250 x 400 x 50 mm are used for moisture content?

[Fill in Y for Yes - N for No - NA for not applicable (**NOTE:** N or NA requires comment)]

COMMENTS:

Quantitative Extraction of Asphalt Cement and Analysis of Extracted Aggregates

LS-282/D-2172/T164

PROCEDURE

Sample Preparation:

1. Sample Size: as per Table 1:

Table 1. Size of Test Samples

Designated Large Sieve Size MTO Sieve Designation, mm	Minimum Mass of Sample kg
2.36	.5
9.5	1.5
13.2	1.5
16.0	2.0

2. Field samples split/quartered to appropriate size?
3. Core samples trimmed before drying to constant mass?

Moisture Content:

1. Minimum of 1000g for moisture content?
2. Sample weighed to 0.1 g?
3. Sample place in oven at 110°C±5°C and dried to constant mass (not >0.1 % of mass per 30 minutes)?

Extraction:

1. Weigh and record mass to nearest 0.1 g ?
2. Transfer mix to extraction bowl and wash with solvent any equipment used after weighing into bowl?
3. Add 0.5 L of solvent and gently break down mix with spike or spatula?
Note: Large size extractors will require more solvent. Add sufficient amount to ensure total coverage of sample?
4. Dry filter pad at 110°C, weigh to 0.1g?
5. Place filter pad fine side up and extractor cover and torque to 11.3 Nm?
6. Allow to soak for 15 minutes?
7. Start spin slowly and increase to a maximum of 1800 rpm (**smaller centrifuge**) and **approximately 1562 rpm for larger 3 liter Ploog apparatus**?
8. Collect and retain extract in suitable container?
9. Stop and add 0.5 L solvent and allow soaking for 10 minutes?
10. Repeat steps 7. and 8.?
11. Stop and add 0.5 L solvent and allow to soak for 5 minutes?
12. Repeat steps 7, 8 and 11 until solvent extract colour is straw coloured?
13. Remove bowl from extraction unit, place in a stand under adequate ventilation and remove cover leaving filter disc in place?
14. Tap filter pad to drop loose fines into bowl?
15. Remove filter pad, invert and scrape fines into weighing pan?
16. Use rubber spatula and stiff brush to transfer all aggregate into weighing pan?
17. Bend filter and place in weighing pan?
18. Place drying pan in oven and dry to constant at 110°C±5°C?

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- 19. Immediately after drying weigh filter pad to nearest 0.1g?..... _____
- 20. Pan and weigh total?

PROCEDURE: (continued)

Determination of mineral fines in extract: High speed centrifuge method:

- 1. Determine mass of empty clean dried centrifuge cup to 0.1 g?
- 2. Place effluent container?
- 3. Transfer all extract into feed container - add washings?
- 4. Start centrifuge and adjust flow control valve to 100 - 150 ml/ min?
- 5. When all extract has passed through follow with several washings using clean solvent?
- 6. Stop centrifuge, remove cup, allow any solvent to evaporate, place cup in oven at 110°C±5°C?....
.....
- 7. Cool and redetermine mass immediately?

Analysis of Extracted Aggregates:

- 1. Washing of aggregate: see LS601 using surfactant (wetting agent)?
- 2. Sieve analysis; see LS602?

Swing back grading:

- 1. For coarse aggregate from extraction - retained 4.75 sieve as total sample?
- 2. For fine aggregate from extraction - pass 4.75 sieve as total sample?

Reporting of Results:

- 1. Check calculations as per LS procedure?
- 2. Asphalt cement reported as percent of total mass of mix to two decimal places?
- 3. Cumulative mass and cumulative percentages passing each sieve reported to one decimal place?
- 4. Swing back reported as percent retained or passing to one decimal place?
- 5. Where two tests are carried out on one divided sample results calculated on basis of cumulative percentage?

[Fill in Y for Yes - N for No - NA for not applicable (**NOTE:** N or NA requires comment)]

COMMENTS:

Name of Laboratory: _____ Date: _____
Inspector: _____ Inspection No: _____